

PATENT

Customer No. 22,852

Attorney Docket No. 2514-0051-00

What is claimed is:

1. A method of treating a target site in or on a mammal, comprising: administering at least one source of peroxide and at least one source of hypochlorite anion to the target site to be treated and allowing the peroxide and hypochlorite to react to produce singlet oxygen.
2. The method according to claim 1, wherein the source of peroxide comprises at least one of hydrogen peroxide, alkyl hydroperoxides, or metal peroxides.
3. The method according to claim 1, wherein the source of hypochlorite anion comprises at least one of metal hypochlorites or hypochlorous acid.
4. The method according to claim 3, wherein the metal hypochlorites comprise at least one hypochlorite chosen from calcium hypochlorite, sodium hypochlorite, lithium hypochlorite, and potassium hypochlorite.
5. The method according to claim 1, wherein the source of hypochlorite anion source comprises chlorine dioxide.
6. The method according to claim 1, wherein the source of peroxide and source of hypochlorite anion are administered sequentially.
7. The method according to claim 6, wherein the source of peroxide and source of hypochlorite anion are administered through at least one conventional syringe and needle.
8. The method according to claim 1, wherein the source of peroxide and source of

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hypochlorite anion are administered simultaneously.

9. The method according to claim 8, wherein the source of peroxide and source of hypochlorite are delivered through at least one dual lumen catheter.
10. The method according to claim 1, wherein the target site is a tumor.
11. The method according to claim 1, wherein the target site is an atherosclerotic plaque.
12. The method according to claim 1, wherein the administering of at least one of the source of peroxide and the source of hypochlorite anion is performed upstream of blood flow to the target site and the blood flow carries at least one of the source of peroxide and the source of hypochlorite anion to the target site.
13. Singlet oxygen produced by a process comprising:
 - a) introducing into a mammal at least one composition comprising at least one source of peroxide; and
 - b) introducing into a mammal at least one composition comprising at least one source of hypochlorite anion.
14. A system for treating a target site in a mammal, comprising:
 - a) at least one source of peroxide;
 - b) at least one source of hypochlorite anion; and
 - c) at least one catheter having at least one lumen.
15. The system according to claim 14, further comprising at least one syringe and at

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least one conduit.

16. The system according to claim 14, wherein the target site is a tumor.
17. The system according to claim 14, wherein the target site is an atherosclerotic plaque.
18. The system according to claim 14, wherein the target site is a site of pathogenic infestation.
19. An apparatus for singlet oxygen delivery comprising:
 - a) a first reservoir for containing at least one peroxide source;
 - b) a second reservoir for containing at least one hypochlorite anion source;
 - c) a first conduit connecting the first reservoir to a delivery port; and
 - d) a second conduit connecting the second reservoir to the delivery port.
20. The apparatus according to claim 19, further comprising a mechanism to simultaneously deliver the peroxide source and the hypochlorite anion source.
21. The apparatus according to claim 19, further comprising a mechanism to control the flow of the peroxide source and the hypochlorite anion source from the first and second reservoirs through the first and second conduits to the delivery point.
22. The apparatus according to claim 19, wherein the delivery port is a catheter.
23. The apparatus according to claim 19, wherein the delivery port is a spray nozzle.
24. An apparatus for singlet oxygen delivery comprising:
 - a) a first reservoir for containing a composition comprising at least one peroxide

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source;

- b) a second reservoir for containing a composition comprising at least one hypochlorite anion source;
- c) a first conduit connecting the first reservoir to a first delivery port; and
- d) a second conduit connecting the second reservoir to a second delivery port;

wherein the first and second delivery ports are oriented to direct output to a target point.

25. The apparatus according to claim 25, wherein the at least one peroxide source and the at least one hypochlorite anion source are solutions.

26. The apparatus according to claim 25, wherein the output is a stream.

27. The apparatus according to claim 25, wherein the output is a mist.

28. The apparatus according to claim 25, wherein at least one of the compositions comprising at least one peroxide source or at least one hypochlorite anion source further comprises at least one surfactant.

29. A method for treating tumor cells or cancer cells as a result of seeding an operative site comprising:

administering as an irrigation or irrigating solution at least one source of peroxide and at least one source of hypochlorite anion.

30. A method for killing pathogens in or on a mammal comprising:

administering an aqueous solution comprising at least one source of peroxide and an aqueous solution comprising at least one source of hypochlorite anion.

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31. The method according to claim 30, wherein at least one of the aqueous solutions comprising at least one peroxide source and at least one source of hypochlorite anion further comprises at least one pharmaceutically acceptable excipient.
32. A singlet oxygen producing composition comprising:
 - a) at least one source of peroxide;
 - b) at least one source of hypochlorite anion; and
 - c) at least one of a surfactant, detergent, scent, colorant, viscosity-modifying agent, solvent, chelator, and pH-modifying agent.
33. A method of disinfecting or decontaminating an inert area, comprising:
 - a) delivering at least one source of peroxide;
 - b) delivering at least one source of hypochlorite anion; and
 - c) delivering at least one a surfactant, detergent, scent, colorant, viscosity-modifying agent, solvent, chelator, and pH-modifying agent.
34. The method according to claim 33, wherein any of a), b), or c) are performed separately.
35. The method according to claim 33, wherein all of a), b), and c) are performed simultaneously.
36. A device for combining at least two fluid reactants, comprising:
at least a first and a second conduit for delivering separate fluid reactants;
a reaction chamber in fluid communication with said first and second conduits,

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wherein the reaction chamber allows for the mixing of the at least two fluid reactants;
and

a reaction chamber port allowing for the passage of the at least two fluid
reactants to the exterior of the device.

37. The device according to claim 36, wherein the device is a catheter.
38. The device according to claim 36, wherein the device is a hypodermic needle.
39. The device according to claim 36, wherein the device is a injecting-type or
infiltrating catheter.
40. A method of treating a target site in or on a mammal, comprising:
administering at least one source singlet oxygen, wherein the at least one source of
singlet oxygen comprises superoxide.

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